TIP PROJECT: R–4436GH

CONTRACT: 34625.2.57

1/28/2016

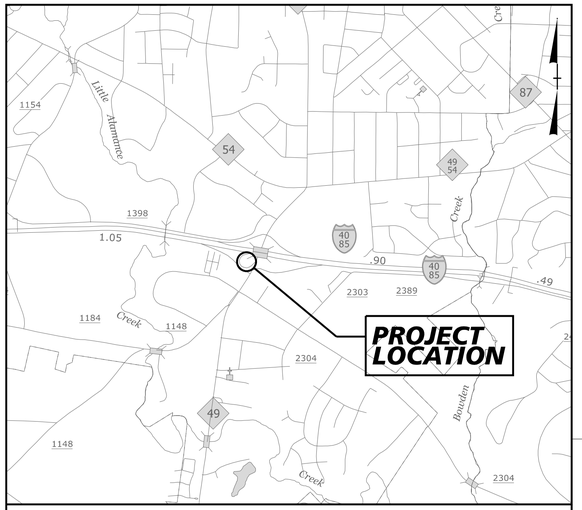
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALAMANCE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4436GH	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34625.2.57	STP-0040(036)	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



VICINITY MAP

LOCATION: SOUTHWEST LOOP OF I–40 AND NC 49 INTERCHANGE

TYPE OF WORK: GRADING AND STORMWATER BMP

100% PLAN SUBMITTAL

NAD 83/
NSRS 2007

4

NCDOT CONTACT: BRIAN LIPSCOMB
PROJECT ENGINEER
HYDRAULICS UNIT

GRAPHIC SCALES

30 15 0 30 60
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–4436 = 0.038 MILES

TOTAL LENGTH TIP PROJECT R–4436 = 0.038 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2015

NC LICENSE #P-0102
421 FAYETTEVILLE ST.
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
MAY 5, 2016

BRYAN T. VICKERY, P.E.
PROJECT ENGINEER

LARRY D. ROBINSON, P.E.
PROJECT DESIGN ENGINEER

DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY
Digitally signed by Bryan T. Vickery
DN: cn=Bryan T. Vickery, o=Kimley-Horn and Associates, Inc., ou=Engineering, email=bryan.vickery@kimley-horn.com, c=US
Date: 2016.01.29 08:20:13 -05'00'

1/29/2016

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	1-A

ROADWAY DESIGN ENGINEER

1/29/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

INDEX OF SHEETS

2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 07/30/12

GRADE LINE:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II AS SHOWN IN STD NO 200.02.

TRAFFIC CONTROL:

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 40 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR OTHERWISE DIRECTED BY NCDOT DIVISION CONSTRUCTION ENGINEER.

DO NOT CONDUCT MULTI-VEHICLE HAULING OPERATIONS BETWEEN THE HOURS OF 6:00-9:00 AM AND 4:00-7:00 PM MONDAY THRU FRIDAY UNLESS APPROVED BY NCDOT DIVISION CONSTRUCTION ENGINEER.

THE FOLLOWING ROADWAY STANDARDS AND ANY OTHER APPLICABLE STANDARDS WITHIN THE "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH-N.C. DEPARTMENT OF TRANSPORTATION RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD NO.	DESCRIPTION
200.02	METHOD OF CLEARING - METHOD II
840.14	CONCRETE DROP INLET - 12" THRU 30" PIPE
840.66	DRAINAGE STRUCTURE STEPS
840.71	CONCRETE AND BRICK PIPE PLUGS

1/28/2016

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

REVISIONS

1/28/2016

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — C/A
- Existing Control of Access — C/A
- Proposed Control of Access — C/A
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

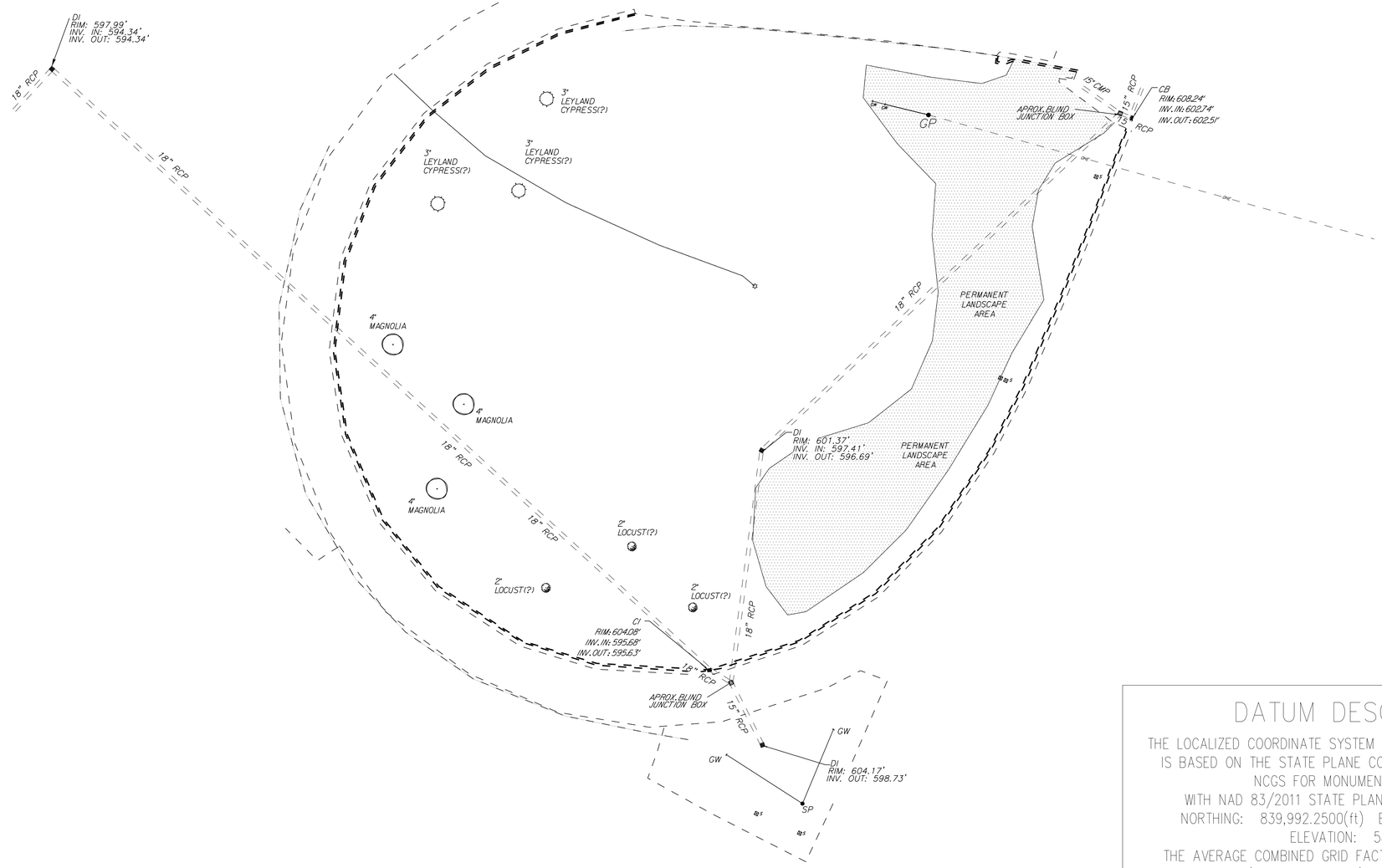
SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

SURVEY CONTROL SHEET



NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LAMBERT"
WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF
NORTHING: 839,992.2500(ft) EASTING: 1,871,938.3500(ft)
ELEVATION: 581.99(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994818
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "LAMBERT" TO "SANDERS" STATION IS
N 75°50'45" W 1800.97(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	1-C

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY
1/29/2016

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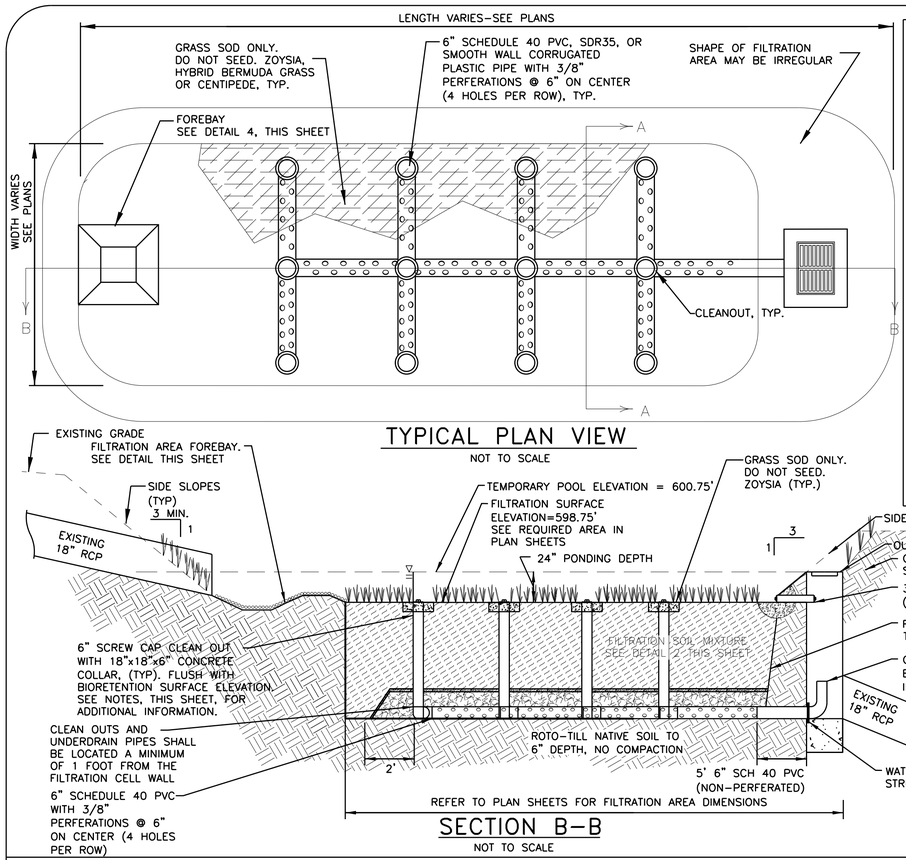
REVISIONS

1/28/2016

REVISIONS

1/28/2016



NOTES:
PONDING DEPTH: 24"

UNDERDRAIN TO BE 6" SCHEDULE 40 PVC CORRUGATED PLASTIC PIPE WITH 3/8" PERF. @ 6" O.C., 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; GRAVEL NOT NECESSARY UNDER PIPES. MINIMUM SLOPE FOR UNDERDRAIN SHALL BE 0.005 FT/FT

UNDERDRAIN PIPES AND CLEANOUTS SHOULD BE LOCATED IN THE QUANTITY AND ELEVATION FOUND ON THE GRADING AND DRAINAGE PLAN (SHEET 4).

CLEANOUT PIPE SHALL BE LOCATED A MINIMUM OF 1.0' FROM THE FILTRATION CELL WALL.

EXPOSED CLEANOUT CAP AND CONNECTORS TO BE CONSTRUCTED OF WHITE UV RESISTANT PVC MATERIAL.

GRASS SOD: SOD IS TO BE PLANTED WITHIN THE FILTRATION AREA AND ALONG THE ADJACENT SIDE SLOPES. SOD IS TO BE ZOYSIA WHICH HAS BEEN GROWN IN SANDY SOILS. LARGE DEPOSITS OF FINES ATTACHED TO THE ROOTS SHALL BE WASHED OFF OR REMOVED FROM THE SOD PRIOR TO INSTALLATION.

THE LOCATION OF FILTRATION AREA SHALL BE PROTECTED FROM EROSION AND SEDIMENT DURING SITE CONSTRUCTION. FILTRATION SOIL MIXTURE SHALL NOT BE PLACED UNTIL THE SURROUNDING SITE IS STABILIZED AND APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING FILTRATION SOIL MIXTURE IMPACTED BY SEDIMENT DEPOSITS DURING CONSTRUCTION.

FILTRATION BASIN CONSTRUCTION SEQUENCE:
1. CONSTRUCT EROSION CONTROL MEASURES.

2. MAINTAIN EXISTING SYSTEM AS NECESSARY UNTIL FILTRATION MEDIA INSTALLATION IS COMPLETE. USE TEMPORARY BYPASS CONVEYANCE AS NECESSARY. (INTENTION IS TO BYPASS FLOW THROUGH EXISTING SYSTEM UNTIL THE BASIN IS STABLE)

3. ENSURE SITE IS PROPERLY STABILIZED WITH A GOOD STAND OF ESTABLISHED VEGETATION BEFORE PROCEEDING. ALL SLOPES DRAINING TO THE FILTRATION AREA SHOULD HAVE ESTABLISHED AT LEAST 90% VEGETATED COVERAGE, AND BE APPROVED BY THE ENGINEER.

4. EXCAVATE AS NECESSARY TO INSTALL FOREBAY, RIP RAP, UNDERDRAIN SYSTEM AND BIOSOIL MIXTURE AFTER COMPLETING UNDERDRAIN SYSTEM ADD BIOSOIL MIXTURE PER THE DETAILS ON THIS SHEET.

5. AFTER THE FILTRATION AREA HAS REACHED FINAL GRADE, REMOVE PORTION OF EXISTING SYSTEM TO ALLOW FLOW INTO BASIN.

DETAIL 1: TYPICAL GRASS FILTRATION AREA

(NOT TO SCALE)
FROM -BMP- Sta. 14+49.62 to -BMP- Sta. 12+61.13

FILTRATION SOIL MIXTURE SHALL BE A MIX THAT MEETS THE FOLLOWING SPECIFICATION:

ITEM	PERCENT BY VOLUME	MATERIAL
SAND	95–97%	CONSTRUCTION SAND (ASTM C–33 SAND)
ORGANIC MATTER	3–5%	HARDWOOD MULCH/ORGANICS

FILTRATION SOIL MIXTURE (FSM): SHALL BE PLACED AND GRADED USING LOW GROUND–CONTACT PRESSURE EQUIPMENT OR BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE FILTRATION FACILITY. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE PERIMETER OF THE FILTRATION FACILITY BEFORE, DURING, OR AFTER THE PLACEMENT OF THE FSM. THE FSM SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 12 INCHES FOR THE ENTIRE AREA OF THE FILTRATION FACILITY. THE FSM SHALL BE COMPACTED BY SATURATING THE ENTIRE AREA OF THE FILTRATION FACILITY AFTER EACH LIFT OF FSM IS PLACED UNTIL WATER FLOWS FROM THE UNDERDRAIN. WATER FOR SATURATION SHALL BE APPLIED BY SPRAYING OR SPRINKLING. AN APPROPRIATE SEDIMENT CONTROL DEVICE SHALL BE USED TO TREAT ANY SEDIMENT–LADEN WATER DISCHARGED FROM THE UNDERDRAIN. IF THE FSM BECOMES CONTAMINATED DURING THE CONSTRUCTION OF THE FACILITY, THE CONTAMINATED MATERIAL SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED MATERIAL AT NO ADDITIONAL COST TO THE ADMINISTRATION. FINAL GRADING OF THE FSM SHALL BE PERFORMED AFTER A 24–HOUR SETTLING PERIOD. FINAL ELEVATIONS SHALL BE WITHIN 2 INCHES OF ELEVATIONS SHOWN ON THE CONTRACT PLANS.

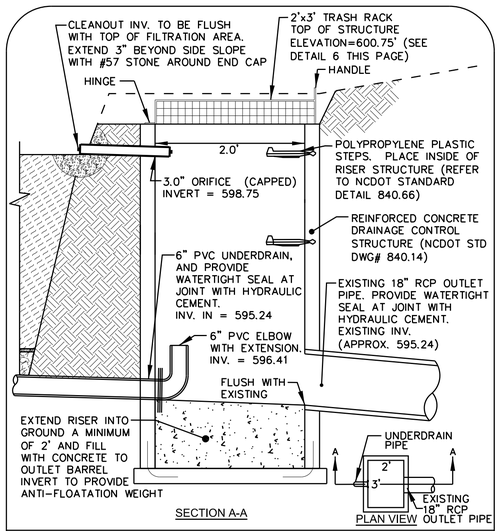
THE FILTRATION SOIL MIXTURE (FSM) SHALL HAVE A P–INDEX RANGE LESS THAN 30.

HYDRAULIC CONDUTIVITY OF FILTRATION SOIL MIX SHALL BE BETWEEN 3.0–6.0 IN/HR.

THE FILTRATION SOIL MIXTURE (FSM) SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES EXCLUDING MULCH. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE FILTRATION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS.

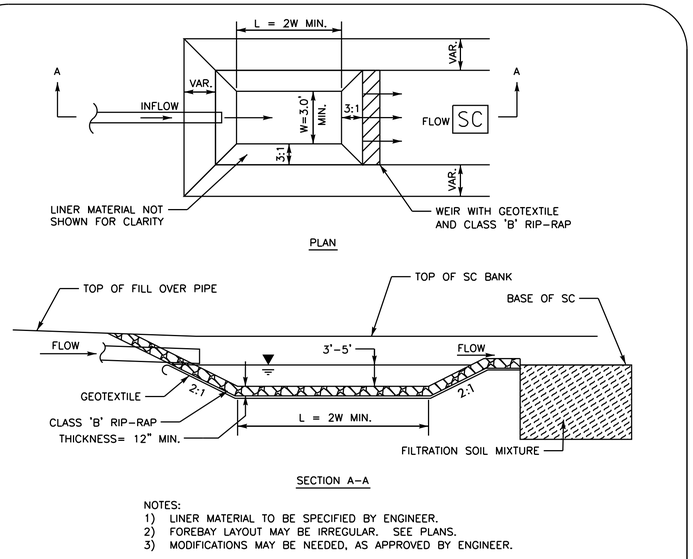
PRIOR TO PLACING THE UNDERDRAIN AND THE FSM, THE BOTTOM OF THE EXCAVATION SHALL BE ROTO–TILLED TO A MINIMUM DEPTH OF 6 INCHES TO ALLEVIATE ANY COMPACTION OF THE FACILITY BOTTOM. ANY SUBSTITUTE METHOD FOR ROTO–TILLING MUST BE APPROVED BY THE ENGINEER PRIORTO USE. ANY PONDED WATER SHALL BE REMOVED FROM THE BOTTOM OF THE FACILITY AND THE SOIL SHALL BE FRIABLE BEFORE ROTO–TILLING.

DETAIL 2: FILTRATION SOIL MIXTURE



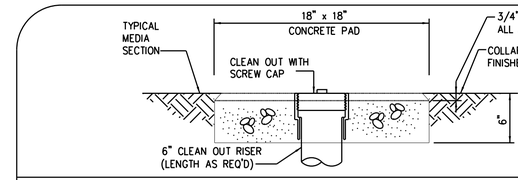
DETAIL 3: OUTLET STRUCTURE

(NOT TO SCALE)

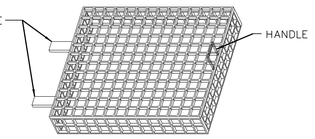


NOTES:
1) LINER MATERIAL TO BE SPECIFIED BY ENGINEER.
2) FOREBAY LAYOUT MAY BE IRREGULAR. SEE PLANS.
3) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

DETAIL 4: FILTRATION AREA FOREBAY



DETAIL 5: 18" x 18" x 6" CONCRETE COLLAR



REMOVABLE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A ¼" BEAD.
2. IF BOLTS ARE CHEMICALLY ANCHORED, FOLLOW 2012 NCDOT STD. DWG. 862.04 FOR ANCHORING PROCEDURE.
3. TRASH RACKS SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM 153.
5. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF THE PROPOSED TRASH RACKS TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION.

DETAIL 6: REMOVEABLE TRASH RACK

(NOT TO SCALE)

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RIGHT–OF–WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R–4436GH	2

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042551 BRYAN T. VICKERY
1/29/2016

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	3

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY
2/29/2016

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REVISIONS

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
0000100000	800	MOBILIZATION	1	L.S.
0000400000	801	CONSTRUCTION SURVEYING	1	L.S.
0022000000	225	UNCLASSIFIED EXCAVATION	3925	C.Y.
	SP	FILTREATION SOIL MIXTURE	775	C.Y.
	SP	CONCRETE COLLAR	10	EA.
	SP	#8 STONE	110	TON
1077000000	SP	#57 STONE	425	TON
2275000000	SP	FLOWABLE FILL	7	C.Y.
0995000000	340	PIPE REMOVAL	59	L.F.
	SP	6″ UNDERDRAIN PIPE - PERFORATED	475	L.F.
	SP	6″ UNDERDRAIN PIPE - NON-PERFORATED	5	L.F.
	SP	6″ PVC CLEANOUT	30	L.F.
	SP	3″ PVC, SCHEDULE 40	7	L.F.
	SP	REMOVABLE TRASH RACK	1	EA.
	SP	ANTI-FLOTATION CONCRETE	1	C.Y.
2286000000	840	MASONRY DRAINAGE STRUCTURES	1	EA.
2308000000	840	MASONRY DRAINAGE STRUCTURES	3	L.F.
3649000000	876	RIP RAP, CLASS B	60	TON
3656000000	876	GEOTEXTILE FOR DRAINAGE	385	S.Y.
6000000000	1605	TEMPORARY SILT FENCE	600	L.F.
6006000000	1610	EROSION CONTROL STONE, CLASS A	105	TON
6009000000	1610	EROSION CONTROL STONE, CLASS B	25	TON
6012000000	1610	SEDIMENT CONTROL STONE	25	TON
6036000000	1631	MATTING FOR EROSION CONTROL	5625	S.Y.
6042000000	1632	¼″ HARDWARE CLOTH	50	L.F.
6084000000	1660	SEEDING AND MULCHING	0.5	ACR.
6102000000	1664	SODDING	2250	SY
6105000000	1664	WATER	50	M/G
6657000000	SP	TRANSPLANT TREES, SHRUBS & PLANTS	2	EA.
	SP	TRAFFIC CONTROL	1	L.S.

*SEE SHEET 3-A FOR DRAINAGE QUANTITIES SUMMARY

2/29/2016

COMPUTED BY:	BTV	DATE:	11-18-2015
CHECKED BY:	LDR	DATE:	11-18-2015

PROJECT NO.	SHEET NO.
R-4436	3-A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
BMP 12+61	0	CL	0401		600.8	595.2		
BMP 13+46	29	RT						
BMP 14+20	21	RT						
SHEET TOTALS								
PROJECT TOTALS								

LINE & STATION	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
BMP 12+61													
BMP 13+46													
BMP 14+20													
SHEET TOTALS													
PROJECT TOTALS													

LINE & STATION	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)
BMP 12+61								
BMP 13+46								
BMP 14+20								
SHEET TOTALS								
PROJECT TOTALS								

LINE & STATION	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	54	60	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
BMP 12+61																		
BMP 13+46																		
BMP 14+20																		
SHEET TOTALS																		
PROJECT TOTALS																		

LINE & STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G
BMP 12+61							1	0.5					
BMP 13+46													
BMP 14+20													
SHEET TOTALS							1	0.5					
PROJECT TOTALS							1	0.5					

LINE & STATION	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33
BMP 12+61			1	1								
BMP 13+46												
BMP 14+20												
SHEET TOTALS			1	1								
PROJECT TOTALS			1	1								

LINE & STATION	T.B.J.B. STD. 840.34	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	30" C.S. ELBOW	36" C.S. ELBOW	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
BMP 12+61															
BMP 13+46											7				
BMP 14+20														59	
SHEET TOTALS											7			59	
PROJECT TOTALS											7			59	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

DD83340

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PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	4
R/W SHEET NO.	

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY

1/29/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

1/28/2016

10+00

DI
RIM: 597.99'
INV. IN: 594.34'
INV. OUT: 594.34'

18" RCP

-BMP- POT Sta. 10+00.00

RETAIN

USE CAUTION WHEN GRADING ADJACENT TO UNDERGROUND POWERLINE

3" LEYLAND CYPRESS(?)

CO-10
INV. = 595.92'

CO-1
INV. = 595.96'

-BMP- PI Sta. 13+82.10

RETAIN EXIST LIGHT POLE

5' WIDE TRANSITION BERM
EL = 598.87'

CO-9
INV. = 595.92'

CO-8
INV. = 595.92'

PERFORATED UNDERDRAIN PIPE (TYP) MIN. SLOPE = 0.5%

RETAIN

4" MAGNOLIA

RETAIN

4" MAGNOLIA

RETAIN

4" MAGNOLIA

I-40 OFF RAMP

18" RCP

APPROX. BLIND JUNCTION BOX

15" CMP

15" RCP

CB
RIM: 608.24'
INV. IN: 602.74'
INV. OUT: 602.51'

RETAIN EXIST SYSTEM

-BMP- POT Sta. 15+95.31

NC 49

PERMANENT LANDSCAPE AREA

-BMP- PI Sta. 14+49.62

FILTRATION FOREBAY
BOTTOM EL = 595.87'
CLASS 'B' RIP RAP
EST 60 TONS
EST 130 SY GEO
SEE DETAIL 4/SHEET 2-A

DI
RIM: 601.37'
INV. IN: 597.41'
INV. OUT: 596.69'

REMOVE 59 LF OF EXIST 18" RCP OUTLET TO FOREBAY
EXIST INV EL = 598.87'

REMOVE EXIST DI

RETAIN EXIST PERMANENT LANDSCAPE AREA

CO-2
INV. = 595.66'

-BMP- PI Sta. 13+46.41

CO-3
INV. = 595.54'

PROPOSED FILTRATION AREA
SEE DETAIL 1/SHEET 2-A

2" LOCUST(?)

2" LOCUST(?)

2" LOCUST(?)

5' MIN

RETAIN

-BMP- PI Sta. 12+61.13

PROPOSED DI
NCDOT STD 840.14
OUTLET STRUCTURE
W/ REMOVABLE TRASH RACK
RIM ELEVATION = 600.75'
CONSTRUCT 3" ORIFICE WITH
CLEANOUT CAP INV. IN = 598.75'
6" SCH 40 INV. IN = 595.24'
EXIST INV OUT = 595.24'
(SEE DETAIL 3/SHEET 2-A)

CO-4
INV. = 595.41'

CO-7
INV. = 595.92'

REMOVE/RESET EXIST 2" DIA. TREE OUTSIDE OF GRADING LIMITS

CO-5
INV. = 595.29'

PROVIDED FILTRATION BED
SURFACE AREA = 10169 SF (EL = 598.75')
TEMPORARY PONDING AREA WITH
24" DEPTH = 15320 SF (EL = 600.75')

CI
RIM: 604.08'
INV. IN: 595.68'
INV. OUT: 595.63'

CO-6
INV. = 595.92'

PLUG, FILL, AND ABANDON 98 LF OF EXIST 18" RCP

REMOVE/RESET EXIST 2" DIA. TREE OUTSIDE OF GRADING LIMITS

OVERTOPPING ELEVATION = 604.08'
MAXIMUM 50-YR W.S.EL. = 603.04'
FREEBOARD = 1.04'

APPROX. BLIND JUNCTION BOX

15" RCP

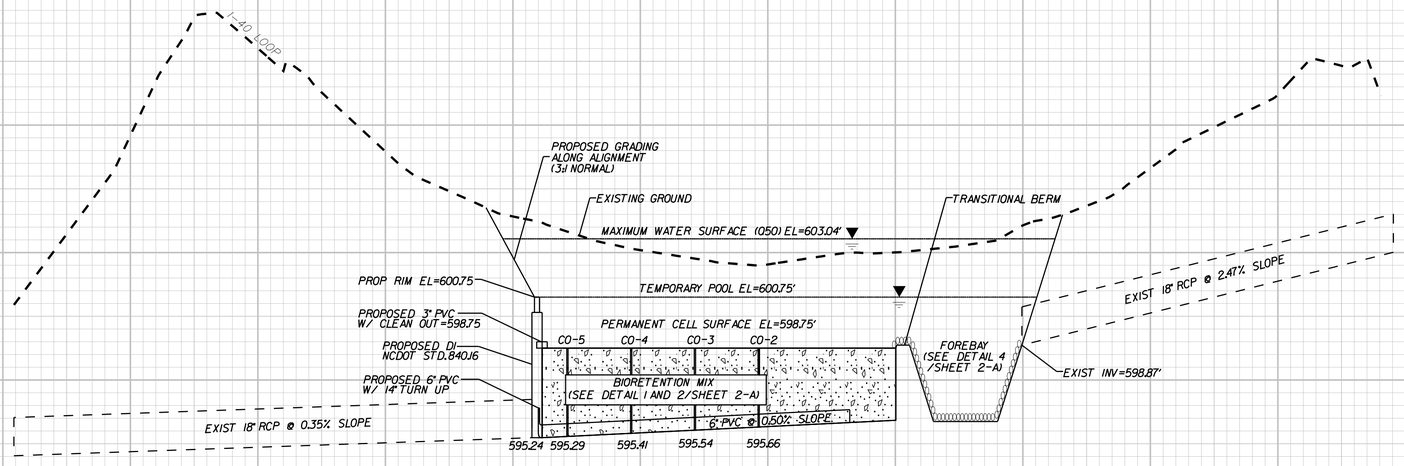
RETAIN EXIST SYSTEM

DI
RIM: 604.17'
INV. OUT: 598.73'

15+00

SEE GENERAL NOTES SHEET 1-A FOR TRAFFIC CONTROL GUIDANCE AND RESTRICTIONS
SEE SHEET 5 FOR PROFILE VIEW

-BMP-



SEE SHEET 4 FOR PLAN VIEW

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	5

R/W SHEET NO.

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY
Registered Professional Engineer
Bryan T. Vickery
1/29/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1/28/2016

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-4436GH	EC-1

HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042551 ENGINEER BRYAN T. VICKERY
3/9/2016

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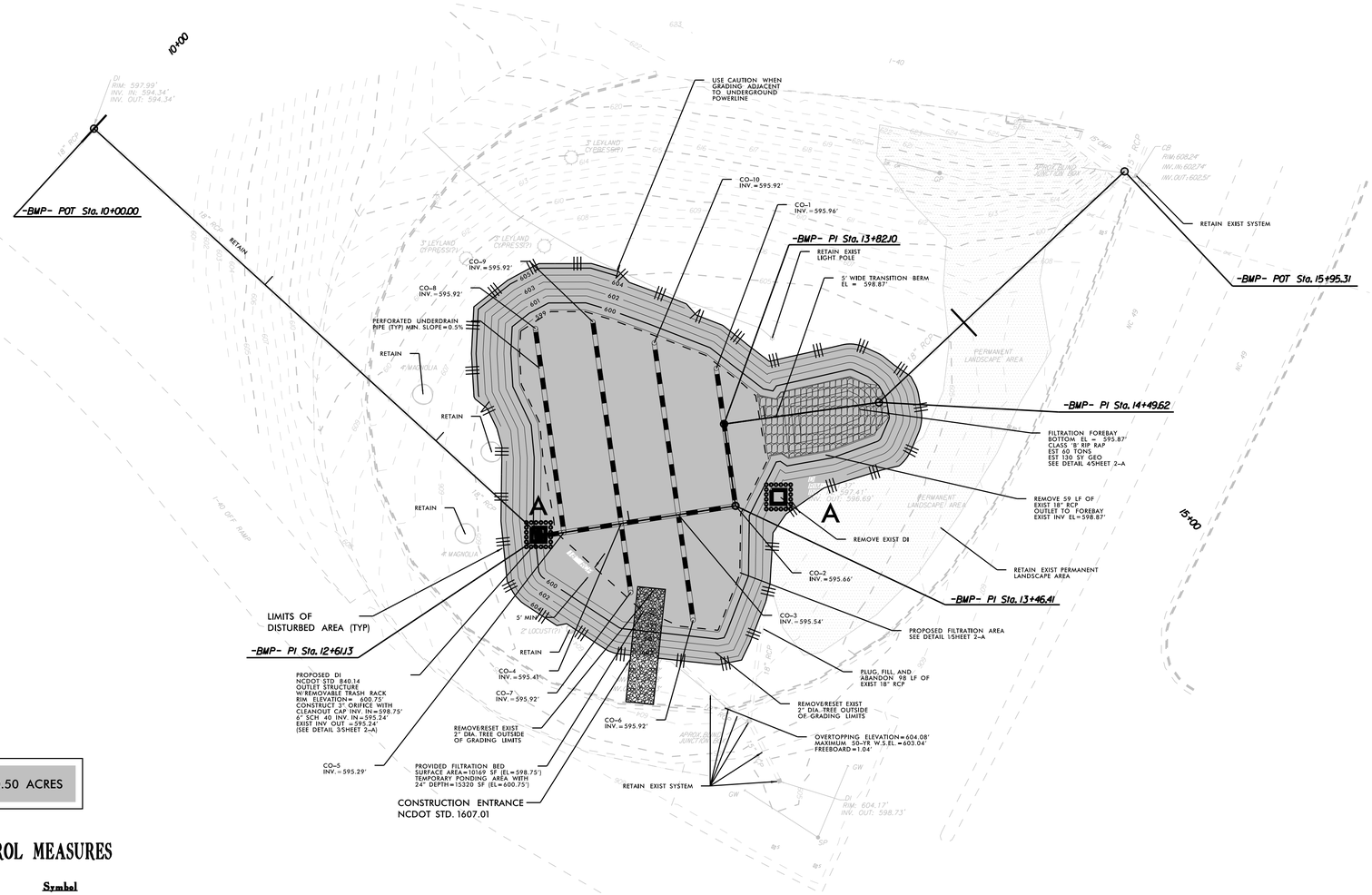
REVISIONS



TOTAL IMPACT AREA (SHADED) = 0.50 ACRES

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
	Reforestation	
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1622.01	Temporary Berms and Slope Drains	
1630.01	Silt Basin Type A	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1636.01	Rock Silt Screen	
1630.04	Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A OR A
1632.02	Type B	B OR B
1632.03	Type C	C OR C

3/9/2016